REMARKS

Status of the Claims

Claims 20-37 are pending in the application. Claim 1-19 are canceled. Claims 20 and 26 are amended to more particularly claim and distinctly define the presently claimed subject matter. The amendments are supported, for example, by original claim 27 and the specification at page 4, lines 4-8. No new matter is being entered.

Summary of Rejections

In the Office Action, claims 1-3, 5-9, and 11-12 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 3, 720, 615 to Izumi et al. ("Izumi"), or in the alternative under 35 U.S.C. 103(a) as allegedly being obvious over Izumi. Claims 1-4, 6-7, and 9-12 are rejected as allegedly being obvious over U.S. Patent No. 4,177,153 to Lowe ("Lowe"). Claims 13, 15-16, and 18 are rejected as allegedly being obvious over Lowe in view of U.S. Patent No. 5,344,579 to Ohtani et al. ("Ohtani"). Claims 14, 17, and 19 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Lowe in view of U.S. Patent No. 6,225,266 to Watts et al. ("Watts"). Claims 20-35 are rejected under 35 U.S.C. 103(a) as allegedly being obvious over Lowe in view of U.S. Patent No. 4,795,583 to Papay ("Papay") and U.S. Patent No. 6,844,301 to Field et al. ("Field"). Claim 36 is rejected under 35 U.S.C. 103(a) as allegedly being obvious over Lowe in view of Field as applied to claim 20, and further in view of Ohtani. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe in view of Papay and Field as applied to claim 20, and further in view of Watts.

All rejections are respectfully traversed. Reconsideration and allowance of claims 20-37 are respectfully requested in view of the following remarks.

Izumi

Claims 1-3, 5-9, and 11-12 are rejected under 35 U.S.C. §102(b) as being allegedly anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly obvious over Izumi. Claims 1-3, 5-9, and 11-12 are canceled by the present amendments. Therefore, the rejections with respect to these claims are now moot.

Lowe

Claims 1-4, 6-7, and 9-12 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe. Claims 1-4, 6-7, and 9-12 are canceled by the present amendments. Therefore, the rejections with respect to these claims are now moot.

Lowe in view of Ohtani

Claims 13, 15-16, and 18 are dependent on claim 1 and are rejected as allegedly unpatentable over Lowe in view Ohtani. Claims 13, 15-16, and 18 are canceled by the present amendments. Therefore, the rejections with respect to these claims are now moot.

Lowe in view of Watts

Claims 14, 17, and 19 are dependent on claim 1 and are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view Watts. Claims 14, 17, and 19 are canceled by the present amendments. Therefore, the rejections with respect to these claims are now moot.

Claims 20-35 Are Patentably Distinguished Over Lowe in view of Papay and Field

Claims 20-35 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Lowe in view of Papay and Field. This rejection is respectfully traversed.

Claim 20 is an independent claim that defines a method for improving the friction durability of a transmission fluid. The method includes preparing a transmission fluid by adding to a base oil, an additive composition comprising: an ashless dispersant and an oil-soluble tertiary amine component, R1R2NR3, wherein R1 comprises about 1 to about 4 carbon atoms and R2 and R3 independently comprise about 8 to about 30 carbon atoms. In other words, the tertiary amine contains at least two relatively long chain hydrocarbon groups and at least one relatively short chain hydrocarbon group.

Lowe discloses, teaches, and suggests a crankcase lubricant that provides improved oxidation properties. This is accomplished by a synergistic combination of a sulfur-containing antioxidant and a tertiary amine having one R group having at least 11 carbon atoms. There is no disclosure in Lowe relating to power transmission fluids or methods to improve the friction durability of power transmission fluids and thus Lowe fails to teach, suggest, or disclose the method as claimed in claim 20.

Further, nothing in Lowe teaches, suggests, or discloses a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups. Lowe discloses that amines having one relatively long chain hydrocarbon group having at least 11 carbon atoms are superior in oxidation performance. (See Col. 7, lines 19-26). Further, Lowe expresses in column 4, lines 13-15, a preference for tertiary amines having one relatively long hydrocarbyl chain and two relatively short hydrocarbyl chains. There is nothing in Lowe that teaches, suggests, or discloses a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20. In fact, all of the examples in Lowe either have only one relatively long chain hydrocarbon group, all short chain hydrocarbon groups, or all long chain hydrocarbon groups.

The fact that Lowe considers the use of all classes of aliphatic tertiary amines **except** ones having two long chains and one short, would lead one of skill in the art reading Lowe to conclude that such amines would not be useful, and thus such a person would not be given any reason to explore the properties of compositions containing the presently claimed amines.

Lowe, in column 3, from lines 5-7, expresses preference for 0.01, or 0.05, or up to 0.3 percent by weight, whereas the present claims require at least 0.5 percent by weight of the tertiary amine. As evidenced by Figs. 2- 6, and as discussed on pages 15-16 of the specification, power transmission fluids containing 4.0 weight percent of the claimed tertiary amine have better friction durability than fluids containing 1.0, 0.5, or 0.0 weight percent of the claimed tertiary amine. Thus, the presently claimed combination of components, in the recited proportions, imparts the property of improved friction durability to the power transmission fluid. This property is neither predicted by the disclosure, nor possessed by the fluids, of Lowe. The presence of an unexpected effect not possessed by the alleged prior art is evidence of nonobviousness (MPEP 706.02(a) III).

Furthermore, the presently claimed method possesses an unexpected property not discernible from Lowe. The specification of Lowe teaches improved oxidation properties in crankcase oils. Friction durability is not considered in Lowe, nor would one of skill in the art infer from Lowe that friction durability could be affected by the use of any tertiary amine and dispersant combination, let alone the combination presently claimed. The claimed combination of an ashless dispersant and an aliphatic tertiary amine having two long chains and one short

chain is critical to providing improved friction durability to power transmission fluids. In addition to the particular tertiary amine, the presently claimed weight range of the amine in the finished fluid is also critical to achieving the unexpected benefits of the invention.

The inventor has surprisingly found that a tertiary amine where R_1 comprises an alkyl or alkenyl group having about 1 to 4 carbon atoms and R_2 and R_3 independently comprise one of an alkyl, an alkenyl, an alkynyl, an alkylthioalkyl, a haloalkyl, and a haloalkenyl group having from about 8 to 30 carbon atoms provides significant advantages over other tertiary amines when utilized in a power transmission fluid. For example, it has surprisingly been found that the presently claimed transmission fluids can be used to control friction properties for longer periods than transmission fluids containing other tertiary amines. Test data and examples supporting these findings may be found in the specification as originally filed.

Additional testing was conducted on two fluids which data is included and further explained in the attached 1.132 Declaration. Two transmission fluid formulations, differing in that the inventive fluid contained a tertiary amine including one methyl group (R1 of 1 carbon and an R2 and R3 of 12-14 carbon atoms) and the comparative fluid contained a tertiary amine including two methyl groups (R1 and R2 of 1 carbon atom and an R3 of 18 carbon atoms), were tested in the LFW-1 friction test (explained in detail at page 15 of the present specification). The comparative fluid would be similar to the teachings of Lowe, i.e., possessing one long chain and two short chains.

The formulations were each tested before aging and after aging, identified as "New" and "Aged", respectively, in the graphs included in the 1.132 Declaration. Measurements of friction characteristics were taken at the start of the test when the ring was stationary (the left-hand side of the graph) and as the ring gradually accelerated to its maximum speed (about 0.5 m/s in the center of the graph) and as the ring gradually decelerated back to zero (the right-hand side of the graph).

In order to assess the difference between the tertiary amine including a single methyl group and the tertiary amine including two methyl groups, the ratio of static to dynamic friction was calculated for each run. A difference of almost 10% was found between the "New" formulation containing one methyl group and the "New" formulation containing two methyl groups. A difference of almost 6% was found between the "Aged" formulations. Accordingly, it is respectfully submitted that there is a difference between the tertiary amines, and the selection

of a tertiary amine as defined in the present claims does bring about an unexpected technical effect.

Papay discloses an automotive transmission fluid comprising, amongst other components, an aliphatic tertiary amine having one long chain and two short chain groups. (See Abstract). The amine is disclosed as containing one long chain having at least 10 carbon atoms and two short chains having up to 4 carbon atoms. Therefore, nothing in Papay discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20.

Field discloses a synthetic ester-containing engine lubricant containing an amine-based friction modifier for improved engine performance and cleanliness. The amine-based friction modifier may be a tertiary amine containing a relatively short chain alcohol. Alcohol containing amines are outside of the scope of the present claims, as read in light of the teachings of the present specification (hydroxyalkyl groups are alcohols). The tertiary amine of present claim 20 defines R1 as comprising an alkyl or alkenyl. Therefore, nothing in Field discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20.

Applicants respectfully submit that none of the cited references provide all of the elements and limitations of claim 20. Therefore, even if one of ordinary skill in the art were to combine these references in some way, that person would still not arrive at the presently claimed method for improving friction durability of a power transmission fluid.

Therefore, claim 20 is patentable over the combination of Lowe, Papay, and Field. Dependent claims 21-35 are also patentable over the references for at least the same reasons that claim 20 is patentable. Accordingly, reconsideration and allowance of claims 20-35 is hereby respectfully requested.

Claim 36 Is Patentably Distinguished Over Lowe in view of Papay and Field and further in view of Ohtani

Claim 36 is dependent on claim 20 and is rejected as being allegedly unpatentable over Lowe in view of Papay and Field, and further in view of Ohtani. This rejection is respectfully traversed.

Claim 36 is dependent from claim 20. And claim 20 is patentable over Lowe in view of Papay and Field, for at least the reasons discussed above. Ohtani discloses a lubricant composition comprising a hydroxyalkyl aliphatic imidazoline and a di(hydroxyalkyl) aliphatic tertiary amine. The di(hydroxyalkyl) aliphatic tertiary amine is disclosed as containing two hydroxyalkyl groups containing 2-4 carbon atoms and one aliphatic group containing 10-25 carbon atoms. Tertiary amines having hydroxyalkyl substituents are outside the scope of the presently claimed tertiary amines, which are disclosed on page 4 of the specification as including alkyl, alkenyl, alkoxyalkyl, or saturated or unsaturated fatty acids, but even if such groups were to be included in the scope of the presently claimed amine, Ohtani still teaches a tertiary amine with two short chain hydrocarbon groups and one long chain hydrocarbon group. Therefore, nothing in Ohtani discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups, as claimed in claim 1.

None of the cited references disclose the particular tertiary amine as claimed in claim 20. Therefore, the combination of Lowe with Papay, Field, and Ohtani remains manifestly deficient in providing all of the elements of claim 20 for at least the reasons discussed herein, and therefore the claim is patentable over the combined references. Accordingly, claim 36, as dependent upon independent claim 20, is likewise nonobvious and patentable in view of the cited combination of references, and reconsideration and allowance of claim 36 is hereby respectfully requested.

Claim 37 Is Patentably Distinguished Over Lowe in view of Papay and Field and further in view of Watts

Claim 37 is dependent on claim 20 and is rejected as being allegedly unpatentable over Lowe in view of Papay and Field and further in view of Watts. This rejection is respectfully traversed.

Claim 37 is dependent from claim 20. And claim 20 is patentable over Lowe in view of Papay and Field, for at least the reasons discussed above. Watts discloses a zinc-free lubricating composition comprising, among other components, a friction modifier that is selected from the group consisting of succinimides and ethoxylated amines. The ethoxylated amine is disclosed as containing one relatively long chain and two ethanol groups. Therefore, nothing in Watts discloses, teaches, or suggests a tertiary amine containing one short chain hydrocarbon group and two relatively long chain hydrocarbon groups as claimed in claim 20.

The combination of Lowe with Papay, Field, and Watts remains manifestly deficient in providing all of the elements of claim 20 for at least the reasons discussed herein, and therefore the claim is patentable over the combined references. Accordingly, claim 37, as dependent upon independent claim 20, is likewise nonobvious and patentable in view of the cited combination of references, and reconsideration and allowance of claim 37 is hereby respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration of this application and the timely allowance of all pending claims.

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This filing is accompanied by a request for a one-month extension of time for reply. Therefore, please debit the required fee of $130 from Deposit Account No. **12-2355**. If the fee calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication to Deposit Account No. **12-2355**.

Respectfully submitted,
LUEDEKA, NEELY & GRAHAM, P.C.
By: Leah O. Robinson
Leah O. Robinson
Reg. No. 44,990

Date: 3/30/09

P.O. Box 1871
Knoxville, TN 37901
Phone (865) 546-4305
Fax (865) 523-4478